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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/618,517	07/11/2003	Peter A. Chiarelli	S-94,789	6591

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UNIVERSITY OF CALIFORNIA
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EXAMINER

WILCZEWSKI, MARY A

ART UNIT	PAPER NUMBER
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2822

DATE MAILED: 08/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No.	Applicant(s)	
	10/618,517	CHIARELLI ET AL.	
	Examiner	Art Unit	
	M. Wilczewski	2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 20 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7 and 10-13 is/are allowed.
- 6) ☒ Claim(s) 6,8,9 and 14-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>6/20/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

This Office action is in response to the amendment and IDS filed on June 20, 2005.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 8, 9, and 14 are rejected under 35 U.S.C. 102(a) as being clearly anticipated by Chiarelli et al., the article entitled *Polyelectrolyte Spin-Assembly*, cited in the IDS filed on June 20, 2005.

Chiarelli et al. disclose a method of forming a multilayered thin film heterostructure comprising alternating layers of polyanionic and polycationic layers which are spin coated onto a substrate. After each polyionic layer is spin-assembled onto the substrate, the substrate is heated or exposed to a vacuum for a sufficient time to effect drying of the coated layer, see the section of the article entitled "Experimental Method".

Claim 14 recites the same method of forming a multilayered thin film heterostructure as claims 8 and 9, hence the limitations of claim 14 are met by a prior art reference which teaches a polycationic layer/polyanionic layer structure. The claim does not require one of the bilayers to be an *uncharged* polymer species.

Claim 14 is rejected under 35 U.S.C. 102(e) as being clearly anticipated by Qui et al., US 2004/0018295, of record.

Qui et al. disclose a method of forming a multilayer thin film heterostructure in which one or more layers of polyanionic and polycationic polymer layers are spin coated onto a substrate. Following the deposition of one ionic polymer, the coated substrate material is dried before the deposition of the next ionic polymer layer having opposite charges, see paragraphs [0179], [0184], [0186].

Claim 14 recites the same method of forming a multilayered thin film heterostructure as claims 8 and 9, hence the limitations of claim 14 are met by a prior art reference which teaches a polycationic layer/polyanionic layer structure. The claim does not require one of the bilayers to be an *uncharged* polymer species.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 14, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Qui et al., US 2004/0018295, of record, or Chiarelli et al., the article entitled *Polyelectrolyte Spin-Assembly*, cited in the IDS filed on June 20, 2005, further in view of Laguitton, U.S. Patent 6,689,478, newly cited.

Qui et al. disclose a method of forming a multilayer thin film heterostructure in which one or more layers of polyanionic and polycationic polymer layers are spin coated onto a substrate. Following the deposition of one ionic polymer, the coated substrate material is dried before the deposition of the next ionic polymer layer having opposite charges, see paragraphs [0179], [0184], [0186].

Chiarelli et al. disclose a method of forming a multilayered thin film heterostructure comprising alternating layers of polyanionic and polycationic layers which are spin coated onto a substrate. After each polyionic layer is spin-assembled onto the substrate, the substrate is heated or exposed to a vacuum for a sufficient time to effect drying of the coated layer, see the section of the article entitled "Experimental Method".

Neither Qui et al. or Chiarelli et al. disclose that at least one polymer includes a chromophore. However, Laguitton discloses that biological or synthetic molecules, for example, chromophores, can be attached to an outermost polyelectrolyte layer in a multilayered thin film heterostructure, see column 6, lines 16-37. It would have been obvious to one skilled in the art, in view of the teaching of Laguitton, that a chromophore could be attached to the uppermost polyionic layer formed in the known methods of either Qui et al. or Chiarelli et al. in order to provide color to the organic layer.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6, 14, 15, and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 14 recites the same method of forming a multilayered thin film heterostructure as claim 16, hence the limitations of claim 14 are met by a prior art reference which teaches a polycationic layer/polyanionic layer structure. The claim does not require one of the bilayers to be an *uncharged* polymer species. However, the claim recites that the uncharged polymer species is selected from the group consisting of poly(vinylpyrrolidinone), polysaccharides, and biopolymers. It is suggested that claim 14 be amended to recite that one of the polymer layers is an uncharged polymer layer. For example, in line 13 of claim 14, after "up upon said substrate", --wherein one of the coating layers of said bilayer is an uncharged polymer species and...-- could be inserted.

Newly-submitted claim 18, which depends from independent claim 9, recites that the plurality of layers includes multiple trilayers having a polycationic layer/polyanionic layer/polyanionic layer structure. However, claim 9 only recites the formation of a bilayer. Claim 6, which has been amended to depend from independent claim 8, also recites that the plurality of layers includes multiple trilayers having a polycationic

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layer/polyanionic layer/polyanionic layer structure. However, claim 8, like claim 9, only recites the formation of a bilayer. Antecedence for "the plurality of layers" is found in claim 7, line 16. It is suggested that claims 8 and 9 be amended to include the *repeating* step recited in lines 14-17 of claim 7. The inclusion of this processing step in claims 8 and 9 would provide antecedence for "the plurality of layers".

Allowable Subject Matter

Claims 7 and 10-13 are allowable over the prior art of record.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additionally cited Statutory Invention Registration, H2046 H, to Roberts et al. discloses a process for mass producing uniform multi-layer non-linear optical polymer thin polar films.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Wilczewski whose telephone number is (571) 272-1849. The examiner can normally be reached on Monday and Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 571-272-1852. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



M. Wilczewski
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